occurring; and

[(d)]   controlling pacing of the heart in a manner corresponding to the type of
supraventricular tachycardia identified.

2.   (Canceled) The method of Claim 1 wherein the step of establishing discrimination
criteria includes the step of establishing criteria for distinguishing between at least two different
types of regular rapid heart rates due to a pacemaker anywhere above a ventricular level.

3.   (Amended) The method of Claim [2] 1 wherein [the step of establishing discrimination
criteria] establishing discrimination criteria for distinguishing between at least two different types
of regular rapid supraventricular heart rates includes [the step of] establishing criteria for
distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia.

4.   (Amended) The method of Claim 3 wherein [the step of] establishing discrimination
criteria includes [the step of] establishing criteria for distinguishing between fast atrial flutter at a
first high rate and [an other] a second atrial flutter at a second lower rate.

5.   (Amended) The method of Claim 1 wherein [the step of] establishing discrimination
criteria includes [the step of] establishing rate-based discrimination criteria for distinguishing
between different types of supraventricular tachycardia and wherein [the step of] comparing at
least one characteristic of the atrial activity signal to the discrimination criteria includes [the step
of] comparing a rate of the atrial activity signal to the discrimination criteria.

6.   (Amended) The method of Claim 1 wherein [the step of] establishing discrimination
criteria includes [the step of] establishing morphology-based discrimination criteria for
distinguishing between different types of supraventricular tachycardia and wherein [the step of]
comparing at least one characteristic of the atrial activity signal to the discrimination criteria
includes [the step of] comparing a morphology characteristic of the atrial activity signal to the
discrimination criteria.

7.   (Amended) The method of Claim 1 wherein [the step of] establishing discrimination

criteria includes [the step of] establishing a multi-dimensional threshold function, and wherein

[the step of] comparing at least one characteristic of the atrial activity signal to the discrimination

criteria includes [the step of] comparing a combination of a plurality of statistics calculated from

a set of depolarization intervals determined from the atrial activity signal to the threshold

function.

8.   (Amended) The method of Claim 1 further comprising [additionally the step of]

monitoring an effect of controlling pacing of the heart in a manner corresponding to the type of

supraventricular tachycardia identified, and automatically adjusting the discrimination criteria in

response thereto.

9.   (Amended) The method of Claim 1 wherein [the step of] controlling [the] pacing of the

heart in a manner corresponding to the type of supraventricular tachycardia and the regular rapid

supraventricular heart rate identified includes [the steps of] providing atrial antitachycardia

pacing to the heart or [an other] a second type of pacing control depending upon the type of

supraventricular tachycardia identified.

10.   (Amended) The method of Claim 10 wherein the [other] second type of pacing control is

ventricular pacing.

11.   (Amended) The method of Claim 10 wherein the [other] second type of pacing control is

selected from the group of pacing controls consisting of ventricular rate regulation and Rate

Smoothing.

12.   (Amended) The method of Claim 1 wherein [the step of] comparing at least one

characteristic of the atrial activity signal to the discrimination criteria includes [the step of]

applying an atrial discrimination algorithm to the atrial activity signal to produce an atrial

discrimination algorithm output value indicative of the type of supraventricular tachycardia

occurring.

13.   (Amended) The method of Claim 12 comprising additionally [the step of] trending a

plurality of atrial discrimination algorithm output values and controlling timing of the pacing of

the heart in a manner corresponding to the type of supraventricular tachycardia identified in

response to the trend of the atrial discrimination algorithm output values.

14.   (Amended) A method for providing pacing therapy to a heart, comprising [the steps of]:

[(a)]   establishing discrimination criteria for <u>distinguishing between regular rapid</u>
         <u>supraventricular heart rates, including</u> distinguishing between fast atrial flutter and
         a slower rate supraventricular tachycardia;

[(b)]   sensing activity of at least one [of the] atria of the heart to provide an atrial
         activity signal;

[(c)]   comparing at least one characteristic of the atrial activity signal to the
         discrimination criteria to identify whether a fast atrial flutter of a slower rate
         supraventricular tachycardia is occurring; and

[(d)]   controlling pacing of the heart to provide atrial antitachycardia pacing to the heart
         if a slower rate supraventricular tachycardia is identified as occurring and
         providing [an other] <u>a second</u> type of pacing control if a fast atrial flutter is
         identified as occurring.

15.   (Amended) The method of Claim 14 wherein [the step of] establishing discrimination

criteria includes [the step of] establishing criteria for distinguishing between the fast atrial flutter

at a first high rate and [an other] <u>a second</u> atrial flutter at a second lower rate.

16.   (Amended) The method of Claim 14 wherein [the step of] establishing discrimination

criteria includes [the step of] establishing rate-based discrimination criteria for distinguishing

between fast atrial flutter and a slower rate supraventricular tachycardia and wherein [the step of]

comparing at least one characteristic of the atrial activity signal to the discrimination criteria

includes [the step of] comparing a rate of the atrial activity signal to the discrimination criteria.

17.   (Amended) The method of Claim 14 wherein [the step of] establishing discrimination criteria includes [the step of] establishing morphology-based discrimination criteria for distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia and wherein [the step of] comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes [the step of] comparing a morphology characteristic of the atrial activity signal to the discrimination criteria.

18.   (Amended) The method of Claim 14 wherein [the step of] establishing discrimination criteria include [the step of] establishing a multi-dimensional threshold function, and wherein [the step of] comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes [the step of] comparing a combination of a plurality of statistics calculated from a set of depolarization intervals determined from the atrial activity signal to the threshold   ·
function.

19.   (Amended) The method of Claim 14 further comprising [additionally the step of] monitoring an effect of [the step of] controlling pacing of the heart, and automatically adjusting the discrimination criteria in response thereto.

20.   (Amended) The method of Claim 14 wherein the [other] second type of pacing control is ventricular pacing.

21.   (Amended) The method of Claim 20 wherein the [other] second type of pacing control is selected from the group of pacing controls consisting of ventricular rate regulation and Rate Smoothing.

22.   (Amended) A method for distinguishing between different types of rapid regular supraventricular tachycardia, comprising [the steps of]:

    [(a)]   establishing an atrial discrimination algorithm including discrimination criteria for distinguishing [between] different types of rapid regular supraventricular tachycardia;

    [(b)]   sensing activity of at least one [of the] atria of the heart to provide an atrial activity signal;

    [(c)]   applying the atrial discrimination algorithm to the atrial activity signal to compare at least one characteristic of said atrial activity signal to the discrimination criteria to identify [the] a type of rapid regular supraventricular tachycardia occurring; and

    [(d)]   providing an indication corresponding to the type of rapid regular supraventricular tachycardia identified.

23.   (Amended) The method of Claim 22 wherein [the step of] establishing an atrial discrimination algorithm includes [the step of] establishing discrimination criteria for distinguishing between fast atrial flutter and a slower rate rapid regular supraventricular tachycardia.

24.   (Amended) The method of Claim 22 wherein [the step of] establishing an atrial discrimination algorithm includes [the step of] establishing discrimination criteria for distinguishing between fast atrial flutter at a first high rate and [an other] a second atrial flutter at a second lower rate.

25.   (Amended) The method of Claim 22 wherein [the step of] establishing an atrial discrimination algorithm includes [the step of] establishing rate-based discrimination criteria for distinguishing between different types of.rapid regular supraventricular tachycardia and wherein [the step of] comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes [the step of] comparing a rate of the atrial activity signal to the discrimination criteria.

26.   (Amended) The method of Claim 22 wherein [the step of] establishing an atrial

discrimination algorithm includes [the step of] establishing morphology-based discrimination

criteria for distinguishing between different types of rapid regular supraventricular tachycardia

and wherein [the step of] comparing at least one characteristic of the atrial activity signal to the

discrimination criteria includes [the step of] comparing a morphology characteristic of the atrial

activity signal to the discrimination criteria.

27.   (Amended) The method of Claim 22 wherein [the step of] establishing an atrial

discrimination algorithm includes [the step of] establishing a multi-dimensional threshold

function, and wherein [the step of] applying the atrial discrimination algorithm to the atrial

activity signal includes [the step of] comparing a combination of a plurality of statistics

calculated from a set of depolarization intervals determined from the atrial activity signal to the

threshold function.

28.   (Amended) The method of Claim 22 further comprising [the additional steps of]

establishing a maximum atrial tracking rate, deriving an atrial rate from an atrial activity signal,

and comparing the derived atrial rate to the maximum atrial tracking rate, and wherein [the step

of] applying the atrial discrimination algorithm to an atrial activity signal is performed only if the

derived atrial rate exceeds the maximum atrial tracking rate.

29.   (Amended) The method of Claim 22 further comprising [the additional step of]

controlling pacing of a heart in a manner corresponding to the type supraventricular tachycardia

identified.

30.   (Amended) A cardiac pacing device, comprising:

  [(a)]   sensing means for sensing activity of at least one [of the] atria of a heart;

  [(b)]   signal detection means coupled to the sensing means for generating an atrial

            activity signal based on the sensed activity of the at least one atria of the heart;

  [(c)]   a pacer for providing pacing pulses to the heart; and

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[(d)]   a processor coupled to the signal detection means for receiving the atrial activity signal and to the pacer for comparing at least one characteristic of the atrial activity signal to discrimination criteria for distinguishing [between] at least two different types of regular rapid heart rates [supraventricular tachycardia] to identify [the] a type of regular supraventricular tachycardia occurring and for controlling the pacer to provide pacing pulses to the heart in a manner corresponding to the type of regular supraventricular tachycardia identified.

32.   (Canceled) The cardiac pacing device of Claim 30 wherein the discrimination criteria include criteria for distinguishing between at least two different types of regular rapid heart rates due to a pacemaker anywhere above a ventricular level.

34.   (Amended) The cardiac pacing device of Claim 33 wherein the discrimination criteria include criteria for distinguishing between fast atrial flutter at a first high rate and [an other] a .: second atrial flutter at a second lower rate.

39.   (Amended) The cardiac pacing device of Claim 30 wherein the processor controls the pacer to provide atrial antitachycardia pacing to the heart or [an other] a second type of pacing depending upon the type of supraventricular tachycardia identified.

40.   (Amended) The cardiac pacing device of Claim 39 wherein the [other] second type of pacing is ventricular pacing.

41.   (Amended) The cardiac pacing device of Claim 40 wherein the [other] second type of pacing is selected from the group of pacing controls consisting of ventricular rate regulation and Rate Smoothing.

42.   (Amended) The cardiac pacing device of Claim 30 wherein the processor means for

comparing at [lease] least one characteristic of the atrial activity signal to the discrimination

criteria includes means for applying an atrial discrimination algorithm to the atrial activity signal

to produce an atrial discrimination algorithm output value indicative of the type of

supraventricular tachycardia occurring.

44.   (Amended) A cardiac pacing device, comprising:

    [(a)]   sensing means for sensing activity of at least one of the atria of a heart;

    [(b)]   signal detection means coupled to the sensing means for generating an atrial

           activity signal based on the sensed activity of the heart;

    [(c)]   a pacer for providing pacing pulses to the heart; and

    [(d)]   a processor coupled to the signal detection means for receiving the atrial activity

           signal and to the pacer for comparing at least one characteristic of the atrial

           activity signal to discrimination criteria for distinguishing between regular rapid

           supraventricular heart rates, including distinguishing between fast atrial flutter and

           a slower rate supraventricular tachycardia to identify whether a fast atrial flutter or

           a slower rate supraventricular tachycardia is occurring and for controlling the

           pacer to provide atrial antitachycardia pacing to the heart if a slower rate

           supraventricular tachycardia is identified as occurring and to provide [an other] a

           second type of pacing if a fast atrial flutter is identified as occurring.

51.   (Amended) The cardiac pacing device of Claim 44 wherein the [other] second type of

pacing is ventricular pacing.

52.   (Amended) The cardiac pacing device of Claim 51 wherein the [other] second type of

pacing is selected from the group of pacing controls consisting of ventricular rate regulation and

Rate Smoothing.

53.   (Amended) An implantable cardiac device, comprising:

[(a)]   sensing means for sensing activity of at least one [of the] atria of a heart;

[(b)]   signal detection means coupled to the sensing means for generating an atrial
          activity signal based on the sensed activity of the <u>at least one</u> atria of the heart;
          and

[(c)]   a processor coupled to the signal detection means for receiving the atrial activity
          signal and for applying an atrial discrimination algorithm including discrimination
          criteria for distinguishing [between] different types of rapid regular
          supraventricular tachycardia to the atrial activity signal to compare at least one
          characteristic of the atrial activity signal to the discrimination criteria to identify
          [the] <u>a</u> type of rapid regular supraventricular tachycardia occurring and for
          providing an indication corresponding to the type of rapid regular supraventricular
          tachycardia identified.

62.   (New) A cardiac pacing device, comprising:

at least one sensor to sense atrial activity of a heart;

a signal detector connected to the at least one sensor to generate an activity signal based
on the sensed atrial activity of the heart;

a pacer for providing pacing pulses to the heart; and

a processor coupled to the signal detector to receive the atrial activity signal and coupled
to the pacer to compare at least one characteristic of the atrial activity signal to discrimination
criteria for distinguishing between regular rapid supraventricular heart rates, including
distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia to identify
whether a fast atrial flutter or a slower rate supraventricular tachycardia is occurring and for
controlling the pacer to provide atrial antitachycardia pacing to the heart for an identified slower
rate supraventricular tachycardia and to provide a second type of pacing for an identified fast
atrial flutter.

Clean Version of the Amended Claims

Method and Apparatus for Using Atrial Discrimination Algorithms to
Determine Optimal Pacing Therapy and Therapy Timing
Applicant: Victor T. Chen et al.
Serial No.: 09/712,600

Please replace claims 1, 3-30,34, 39-42, 44 and 51-53 with their respective claims, as amended, below:

1.   (Amended) A method for providing pacing therapy to a heart, comprising:

establishing discrimination criteria for distinguishing different types of supraventricular tachycardia, including establishing discrimination criteria for distinguishing at least two different types of regular rapid supraventricular heart rates;

sensing activity of at least one atria of the heart to provide an atrial activity signal;

comparing at least one characteristic of the atrial activity signal to the discrimination criteria to identify a type of supraventricular tachycardia occurring; and

controlling pacing of the heart in a manner corresponding to the type of supraventricular tachycardia identified.

3.   (Amended) The method of Claim 1 wherein establishing discrimination criteria for distinguishing between at least two different types of regular rapid supraventricular heart rates includes establishing criteria for distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia.

4.   (Amended) The method of Claim 3 wherein establishing discrimination criteria includes establishing criteria for distinguishing between fast atrial flutter at a first high rate and a second atrial flutter at a second lower rate.

5.   (Amended) The method of Claim 1 wherein establishing discrimination criteria includes establishing rate-based discrimination criteria for distinguishing between different types of

supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a rate of the atrial activity signal to the discrimination criteria.

6.   (Amended) The method of Claim 1 wherein establishing discrimination criteria includes establishing morphology-based discrimination criteria for distinguishing between different types of supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a morphology characteristic of the atrial activity signal to the discrimination criteria.

7.   (Amended) The method of Claim 1 wherein establishing discrimination criteria includes establishing a multi-dimensional threshold function, and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a combination of a plurality of statistics calculated from a set of depolarization intervals determined from the atrial activity signal to the threshold function.

8.   (Amended) The method of Claim 1 further comprising monitoring an effect of controlling pacing of the heart in a manner corresponding to the type of supraventricular tachycardia identified, and automatically adjusting the discrimination criteria in response thereto.

9.   (Amended) The method of Claim 1 wherein controlling pacing of the heart in a manner corresponding to the type of supraventricular tachycardia and the regular rapid supraventricular heart rate identified includes providing atrial antitachycardia pacing to the heart or a second type of pacing control depending upon the type of supraventricular tachycardia identified.

10.   (Amended) The method of Claim 10 wherein the second type of pacing control is ventricular pacing.

11.   (Amended) The method of Claim 10 wherein the second type of pacing control is selected from the group of pacing controls consisting of ventricular rate regulation and Rate Smoothing.

12.   (Amended) The method of Claim 1 wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes applying an atrial discrimination algorithm to the atrial activity signal to produce an atrial discrimination algorithm output value indicative of the type of supraventricular tachycardia occurring.

13.   (Amended) The method of Claim 12 comprising additionally trending a plurality of atrial discrimination algorithm output values and controlling timing of the pacing of the heart in a manner corresponding to the type of supraventricular tachycardia identified in response to the trend of the atrial discrimination algorithm output values.

14.   (Amended) A method for providing pacing therapy to a heart, comprising :
        establishing discrimination criteria for distinguishing between regular rapid supraventricular heart rates, including distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia;
        sensing activity of at least one atria of the heart to provide an atrial activity signal;
        comparing at least one characteristic of the atrial activity signal to the discrimination criteria to identify whether a fast atrial flutter of a slower rate supraventricular tachycardia is occurring; and
        controlling pacing of the heart to provide atrial antitachycardia pacing to the heart if a slower rate supraventricular tachycardia is identified as occurring and providing a second type of pacing control if a fast atrial flutter is identified as occurring.

15.   (Amended) The method of Claim 14 wherein establishing discrimination criteria includes establishing criteria for distinguishing between the fast atrial flutter at a first high rate and a second atrial flutter at a second lower rate.

16.   (Amended) The method of Claim 14 wherein establishing discrimination criteria includes establishing rate-based discrimination criteria for distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a rate of the atrial activity signal to the discrimination criteria.

17.   (Amended) The method of Claim 14 wherein establishing discrimination criteria includes establishing morphology-based discrimination criteria for distinguishing between fast atrial flutter and a slower rate supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a morphology characteristic of the atrial activity signal to the discrimination criteria.

18.   (Amended) The method of Claim 14 wherein establishing discrimination criteria include establishing a multi-dimensional threshold function, and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a combination of a plurality of statistics calculated from a set of depolarization intervals determined from the atrial activity signal to the threshold function.

19.   (Amended) The method of Claim 14 further comprising monitoring an effect of controlling pacing of the heart, and automatically adjusting the discrimination criteria in response thereto.

20.   (Amended) The method of Claim 14 wherein the second type of pacing control is ventricular pacing.

21.   (Amended) The method of Claim 20 wherein the second type of pacing control is selected from the group of pacing controls consisting of ventricular rate regulation and Rate Smoothing.

22.   (Amended) A method for distinguishing between different types of rapid regular supraventricular tachycardia, comprising:

        establishing an atrial discrimination algorithm including discrimination criteria for distinguishing different types of rapid regular supraventricular tachycardia;

        sensing activity of at least one atria of the heart to provide an atrial activity signal;

        applying the atrial discrimination algorithm to the atrial activity signal to compare at least one characteristic of said atrial activity signal to the discrimination criteria to identify a type of rapid regular supraventricular tachycardia occurring; and

        providing an indication corresponding to the type of rapid regular supraventricular tachycardia identified.

23.   (Amended) The method of Claim 22 wherein establishing an atrial discrimination algorithm includes establishing discrimination criteria for distinguishing between fast atrial flutter and a slower rate rapid regular supraventricular tachycardia.

24.   (Amended) The method of Claim 22 wherein establishing an atrial discrimination algorithm includes establishing discrimination criteria for distinguishing between fast atrial flutter at a first high rate and a second atrial flutter at a second lower rate.

25.   (Amended) The method of Claim 22 wherein establishing an atrial discrimination algorithm includes establishing rate-based discrimination criteria for distinguishing between different types of rapid regular supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a rate of the atrial activity signal to the discrimination criteria.

26.   (Amended) The method of Claim 22 wherein establishing an atrial discrimination algorithm includes establishing morphology-based discrimination criteria for distinguishing between different types of rapid regular supraventricular tachycardia and wherein comparing at least one characteristic of the atrial activity signal to the discrimination criteria includes comparing a morphology characteristic of the atrial activity signal to the discrimination criteria.

27.   (Amended) The method of Claim 22 wherein establishing an atrial discrimination algorithm includes establishing a multi-dimensional threshold function, and wherein applying the atrial discrimination algorithm to the atrial activity signal includes comparing a combination of a plurality of statistics calculated from a set of depolarization intervals determined from the atrial activity signal to the threshold function.

28.   (Amended) The method of Claim 22 further comprising establishing a maximum atrial tracking rate, deriving an atrial rate from an atrial activity signal, and comparing the derived atrial rate to the maximum atrial tracking rate, and wherein applying the atrial discrimination algorithm to an atrial activity signal is performed only if the derived atrial rate exceeds the maximum atrial tracking rate.

29.   (Amended) The method of Claim 22 further comprising controlling pacing of a heart in a manner corresponding to the type supraventricular tachycardia identified.

30.   (Amended) A cardiac pacing device, comprising:

sensing means for sensing activity of at least one atria of a heart;

signal detection means coupled to the sensing means for generating an atrial

activity signal based on the sensed activity of the at least one atria of the heart;

a pacer for providing pacing pulses to the heart; and

a processor coupled to the signal detection means for receiving the atrial activity

signal and to the pacer for comparing at least one characteristic of the atrial activity signal

to discrimination criteria for distinguishing at least two different types of regular rapid

heart rates to identify a type of regular supraventricular tachycardia occurring and for

controlling the pacer to provide pacing pulses to the heart in a manner corresponding to

the type of regular supraventricular tachycardia identified.

34.   (Amended) The cardiac pacing device of Claim 33 wherein the discrimination criteria

include criteria for distinguishing between fast atrial flutter at a first high rate and a second atrial

flutter at a second lower rate.

39.   (Amended) The cardiac pacing device of Claim 30 wherein the processor controls the

pacer to provide atrial antitachycardia pacing to the heart or a second type of pacing depending

upon the type of supraventricular tachycardia identified.

40.   (Amended) The cardiac pacing device of Claim 39 wherein the second type of pacing is

ventricular pacing.

41.   (Amended) The cardiac pacing device of Claim 40 wherein the second type of pacing is

selected from the group of pacing controls consisting of ventricular rate regulation and Rate

Smoothing.

42.   (Amended) The cardiac pacing device of Claim 30 wherein the processor means for
comparing at least one characteristic of the atrial activity signal to the discrimination criteria
includes means for applying an atrial discrimination algorithm to the atrial activity signal to
produce an atrial discrimination algorithm output value indicative of the type of supraventricular
tachycardia occurring.

44.   (Amended) A cardiac pacing device, comprising:

          sensing means for sensing activity of at least one of the atria of a heart;

          signal detection means coupled to the sensing means for generating an atrial
activity signal based on the sensed activity of the heart;

          a pacer for providing pacing pulses to the heart; and

          a processor coupled to the signal detection means for receiving the atrial activity
signal and to the pacer for comparing at least one characteristic of the atrial activity signal
to discrimination criteria for distinguishing between regular rapid supraventricular heart
rates, including distinguishing between fast atrial flutter and a slower rate
supraventricular tachycardia to identify whether a fast atrial flutter or a slower rate
supraventricular tachycardia is occurring and for controlling the pacer to provide atrial
antitachycardia pacing to the heart if a slower rate supraventricular tachycardia is
identified as occurring and to provide a second type of pacing if a fast atrial flutter is
identified as occurring.

51.   (Amended) The cardiac pacing device of Claim 44 wherein the second type of pacing is
ventricular pacing.

52.   (Amended) The cardiac pacing device of Claim 51 wherein the second type of pacing is
selected from the group of pacing controls consisting of ventricular rate regulation and Rate
Smoothing.

53.   (Amended) An implantable cardiac device, comprising:

sensing means for sensing activity of at least one atria of a heart;

signal detection means coupled to the sensing means for generating an atrial activity signal based on the sensed activity of the at least one atria of the heart; and

a processor coupled to the signal detection means for receiving the atrial activity signal and for applying an atrial discrimination algorithm including discrimination criteria for distinguishing different types of rapid regular supraventricular tachycardia to the atrial activity signal to compare at least one characteristic of the atrial activity signal to the discrimination criteria to identify a type of rapid regular supraventricular tachycardia occurring and for providing an indication corresponding to the type of rapid regular supraventricular tachycardia identified.